

In re Patent Application of:
DENYER ET AL.
Serial No. 09/891,134
Filing Date: JUNE 25, 2001

Listing of the Claims:

This listing of claims replaces all prior versions or listings in the application.

Claims 1 to 31 (Cancelled).

32. (New) A method of operating a solid state image sensor array comprising a plurality of active pixels, the method comprising:

resetting and immediately reading a preliminary output from each pixel;

reading a first output from each pixel after a first period of time since a prior reset, the first output representing a cumulative signal during the first period of time since the prior reset;

reading a second output from each pixel after a second period of time since the prior reset and overlapping the first period of time and without resetting each pixel, the second output representing a cumulative signal during the second period of time since the prior reset and overlapping the first period of time;

determining a difference between the preliminary output and each of the first and second outputs to obtain respective first and second sets of image data substantially free of noise components represented by the preliminary outputs and having first and second dynamic ranges; and

combining the first and second sets of image data to obtain a resultant set of image data having a dynamic range different from the first and second dynamic ranges.

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33. (Newly presented) A method according to Claim 32, including:

reading a third output from each pixel after a third period of time since the prior reset and overlapping the first and second periods of time and without resetting each pixel, the third output representing a cumulative signal during the third period of time since the prior reset and overlapping the first and second periods of time;

determining a difference between the preliminary output and the third output to obtain a third set of image data having a third dynamic range; and

combining the first, second and third sets of image data to obtain a resultant set of image data having a dynamic range different from the first, second and third dynamic ranges.

34. (New) A method according to Claim 32, wherein the first and second periods of time are selected to be an integer multiple of a predetermined lighting flicker period.

35. (New) A method according to Claim 32, wherein the image sensing array remains continuously exposed to incident light during resetting and the reading of the first and second outputs.

36. (Newly presented) A solid state image sensor comprising:

a plurality of active pixels;

a vertical shift register connected to rows of said plurality of active pixels;

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a horizontal shift register connected to columns of
said plurality of active pixels;

scanning circuitry connected to said vertical and
horizontal shift registers for reading said plurality of
active pixels by

resetting and immediately reading a preliminary
output from each pixel,

reading a first output from each pixel after a
first period of time since a prior reset, the first
output representing a cumulative signal during the
first period of time since the prior reset,

reading a second output from each pixel after a
second period of time since the prior reset and
overlapping the first period of time and without
resetting each pixel, the second output representing
a cumulative signal during the second period of time
since the prior reset and overlapping the first
period of time,

determining a difference between the
preliminary outputs and each of the first and second
outputs to obtain respective first and second sets
of image data substantially free of noise components
represented by the preliminary outputs and having
first and second dynamic ranges, and

combining the first and second sets of image
data to obtain a resultant set of image data having
a dynamic range different from the first and second
dynamic ranges.

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37. (New) A solid state image sensor according to Claim 36, wherein the first and second periods of time are selected to be an integer multiple of a lighting flicker period.

38. (New) A solid state image sensor according to Claim 36, wherein said image sensing array remains continuously exposed to incident light during resetting and the reading of the first and second outputs.

39. (New) A solid state image sensor according to Claim 36, wherein said plurality of active pixels, said vertical and horizontal shift registers and said scanning circuitry are incorporated into a camera.